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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/863,118 | 05/22/2001 | Manoocher M.B. Birang | 784C05/149004 | 9201 |

32588 7590 09/18/2002

APPLIED MATERIALS, INC.
2881 SCOTT BLVD. M/S 2061
SANTA CLARA, CA 95050

EXAMINER

NGUYEN, DAVID T

| ART UNIT | PAPER NUMBER |
|----------|--------------|
|----------|--------------|

3723

DATE MAILED: 09/18/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/863,118

Applicant(s)

BIRANG ET AL.

Examiner

David Nguyen

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 17-53 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 17-53 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 589.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Objections

1. Claims 25, 38, 39 are objected to because of the following informalities:
 - a. claim 25 line 1, "The polishing pad of claim 25" should be --The polishing pad of claim 23 or 24--.
 - b. claim 38 line 1, "The polishing pad of claim 27" is it a dependent claim of an independent claim 37? since claim 27 does not have a side section.
 - c. claim 39 line 1, "The polishing pad of claim 33" is it a dependent claim of an independent claim 37? since claim 33 does not have a lateral.
 - d. the drawing numbers 24, 26, 28 are not disclosed in description.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
3. Claims 18, 12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
 - a. The following phrases in the claims are vague, indefinite, and or awkwardly and confusing worded:
 - i. "a second layer adjacent to the first layer" (claim 18, line 2). This phrase is awkwardly worded, lacks proper antecedent basis since it was not properly earlier referred to.

- ii. "The transparent . . . the first layer"" (claim 19, lines 1-2). This phrase is vague, indefinite, and/or awkwardly and confusingly worded.
- iii. "the aperture . . . the second layer" in claim 20 lines 1,2. This phrase is vague, indefinite, and/or awkwardly and confusingly worded.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 17, 18, 20, 21, 23, 26, 28, 32, 33, 35, 36 are rejected under 35 U.S.C. 102(b) as being anticipated by Lustig et al, patent number 5, 433,651.

- a. Regarding claims 17, 23, Lustig et al's fig. 3 discloses a polishing pad having a first top layer and second bottom layer comprising an article having a polishing surface and a surface opposite the polishing surface, a substantially transparent section⁷² formed in the polishing surface, and an aperture formed in the surface opposite the polishing surface and aligned with the transparent section.
- b. Regarding claims 18, 20, 21, 28, Lustig discloses the article includes a first layer with the polishing surface and a second layer adjacent to the first layer, the aperture extends through the second layer, the transparent section and the aperture have substantially the same dimension.

- c. Regarding to the claims 26, 40, 50, 52 Lustig' fig 3 discloses the second layer is a backing layer.
- d. Regarding to the claims 32, 33, 34, 35, 36 Lustig's apparatus also comprising a platen to support the polishing pad, wherein the second layer abuts the platen, an optical monitoring system configured to direct a light beam through the aperture and the transparent section to impinge the substrate and measure reflections of the light beam from the substrate.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 19, 22, 24, 25, 27, 29, 30, 31, 46, 53 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lustig et al.

- a. Regarding to claims 19, 22, Lustig discloses the transparent section extends through second layer of the polishing pad, however, Lustig does not disclose the transparent section extends through the first top layer and because of more protection from damaged of transparent top surface contacts to wafer, a top surface of the transparent section is not substantially coplanar with the polishing surface. Thus, It would have been obvious to one having ordinary skill in the art at the time the invention was made to have the transparent section extended through first layer, since it has been held that rearranging parts of an invention involves only routine skill in the art. In re Japikse, 86 USPQ 70.

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b. Regarding to claims 24, 25, Lustig discloses the transparent section 72 made of quartz, fused silica, sapphire (aluminum oxide) or diamond. It would have been obvious to one having ordinary skill in the art at the time the invention was made to a polyurethane material, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. In re Leshin, 125 USPQ 416.

c. Regarding to claims 27, 29, 30, 31. Lustig discloses an article having a polishing surface and a substantially transparent plug, Lustig does not teach in detail with two different portions with different dimension and does not teach in detail of dimension of aperture. It would have been obvious matter of design choice to have made the transparent section and the aperture of any size, since such a modification would have involved a mere change in size of a component. A change in size is generally recognized as being within the level of ordinary skill in art. In re Rose, 105 USPQ 237 (CCPA 1955).

d. Regarding to claim 31, applicant discloses a chemical mechanical polishing apparatus comprising a motor to generate relative motion between the carrier head 12 and the polishing pad supported by platen 16, Lustig discloses the polishing table 62 wafer carrier 60 (head), polishing pad 66, the platen 64, Lustig does not disclose a motor, however the rotation 104 is represented for the power of the motor.

Conclusion

a. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

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Swedek et al disclose end point detection with light beams of different wavelengths.

Wiswesser et al disclose method and apparatus for measuring substrate layer thickness during chemical mechanical polishing.

Wiswesser et al also disclose method and apparatus for detecting an end-point in chemical-mechanical polishing metal layers.

Wiswesser et al also disclose method and apparatus for determining substrate layer thickness during chemical mechanical polishing.

Dunton et al disclose laser interferometry end point detection with windowless polishing pad for chemical mechanical polishing process.

Roberts et al discloses molded polishing pad having integral window.

Lustig et al discloses in-situ endpoint detection and process monitoring method and apparatus for CMP.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David Nguyen whose telephone number is 703-305-5712. The examiner can normally be reached on 7:30-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph Hail can be reached on 308-2687. The fax phone numbers for the

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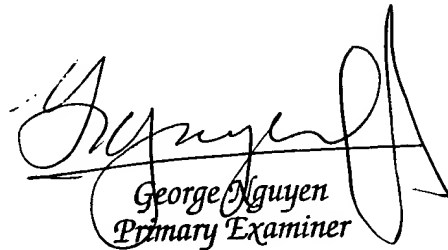
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organization where this application or proceeding is assigned are 703-872-9302 for regular communications and 703-872-9303 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0000.

tdn
September 4, 2002



George Nguyen
Primary Examiner